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No. 163

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PEOPLE'S REPUBLIC OF CHINA SCIENTIFIC ABSTRACTS

No. 163

This serial publication contains abstracts of articles published in selected scientific and technical journals. JPRS is unable to honor requests for original source materials or information as to the availability of full translations of these articles.

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ACTA BIOCHIMICA ET BIOPHYSICA SINICA

AUTHOR: None

ORG: Group for Research on the Cadaver of Ma-Wang-tui, Shanghai Institute of Biochemistry, Chinese Academy of Sciences; and Hunan Medical College, Ch'ang-sha

TITLE: "The Degree of Preservation of the Cadaver of the Marquise of Tai, Excavated From the 2,100 Year-old Han Tomb of Ma-wang-tui, as Revealed by a Study of the Fine Structure of the Muscle and Other Tissues"

SOURCE: Shanghai SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI-HSUEH-PAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Mar 76 pp 19-33

EXCERPT OF ENGLISH ABSTRACT: the best preserved portions of the muscle tissues of the wife of LI Ts'ang [0448 5547] retained distinct contours and showed characteristic cross-striations. Under the electron microscope, one could see clearly substances of the A band and the Z band, whereas those of the H zone and the I band disappeared almost completely. The muscle fibril assumed the shape of a bamboo shoot, looking as if it were made up of a stack of alternate layers of 2 'half A disks' to one Z disk, held together by remnants of the microfilaments and wrapped up in the sarcoplasmic reticulum. Aspects of preservation, such as the exogenous and endogenous factors in vitro and in vivo stability of the protein molecules concerned and rapid and long term changes suffered in the course of time were discussed in the light of experimental findings.

This paper was received for publication on 21 October 1975.

AUTHOR: CHIN Tzu-yu [6855 1311 3342]  
SHEN Shou-chiang [3088 1343 3068]  
TS'AO Kung-chieh [2580 0501 2638]  
YANG Wan-hsia [2799 2519 7209]  
SUN Yu-k'un [1327 3768 2492]

ORG: CHIN, SHEN of Institute of Crop Breeding and Cultivation, Chekiang Provincial Academy of Agriculture; TS'AO, YANG, SUN of Shanghai Institute of Biochemistry, Chinese Academy of Sciences

TITLE: "Studies on the Application of RNA Hydrolyzate to Rice Production and Its Mechanism of Action: III. The Absorption and Transportation of <sup>14</sup>C-labeled RNA Hydrolyzate in Rice Plants"

SOURCE: Shanghai SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Mar 76 pp 35-47

EXCERPT OF ENGLISH ABSTRACT: The rate of penetration of RNA hydrolyzate into rice has been followed using <sup>14</sup>C-labeled free bases, nucleosides, and nucleotides (adenine, uridine, GMP, AMP, AND UMP.) These can be introduced into rice plants through both leaves and roots and about 70-80% is absorbed in 6 hours. So, if it rains within 6 hours after spraying, they must be sprayed again. Low molecular weight substances, RNA, DNA, proteins, and polysaccharides are extracted from

[continuation of SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO No 1, 1976  
pp 35-47]

the rice plants and quantitatively separated. The resultsshow that <sup>14</sup>C-labeled adenine and uridine are quickly converted to their corresponding nucleotides but only a small part of the <sup>14</sup>C-radioactivity is incorporated into the RNA fractions. This suggests that the RNA hydrolyzate in the form of nucleotides and their derivatives probably takes an active part in the metabolism of rice. This paper was received for publication on 2 Jun 1975.

AUTHOR: None

ORG: Cancer Research Group, Shanghai Institute of Biochemistry, Chinese Academy of Sciences; Department of Pathogeno-Pathology, Shanghai College of Chinese Traditional Medicine; Department of Pathology, Shanghai Cancer Hospital

TITLE: "Localization of AFP in Rat Liver Tissue in Correlation to the Dynamics of Serum AFP During 3'-MEDAB Carcinogenesis"

SOURCE: Shanghai SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Mar 76 pp 49-59

EXCERPT OF ENGLISH ABSTRACT: Observations were carried out by the immunoenzyme technique and radio-rocket-electrophoresis autography, with the following results: (1) During the precancerous stage, AFP was found in a few liver cells in the pseudolobules, in the cells of the basophilic anaplastic regenerative nodules, and in some of the 'survival' liver cells and 'transitional' cells. Most of these cells showed basophilic cytoplasm and appeared dedifferentiated. (2) AFP was not detected in the bile duct nor most of the liver cell carcinomas of low grade malignancy, but was demonstrated in the poorly differentiated liver cell carcinomas. The intensity of AFP synthesis in the latter increased in coincidence with their activity in cell growth and cell proliferation but decreased with cell differentiation, and was not directly related to whether or not the cell was in the mitotic stage. (3) In the liver cell carcinomas, the extent of AFP positive reaction as visualized by the immunoenzyme technique basically paralleled the serum AFP level. This paper was received for publication on 28 Jun 1975.

AUTHOR: None

ORG: Insulin Research Group, Shanghai Institute of Biochemistry, Chinese Academy of Sciences; Peking Insulin Structure Research Group; Biochemical Preparation Group, Institute of Biophysics, Chinese Academy of Sciences

TITLE: "Structural Studies on DES-(B-chain C-Terminal Pentapeptide) Insulin: I. The Preparation and Properties of Despentapeptide Insulin"

SOURCE: Shanghai SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Mar 76 pp 61-66

TEXT OF ENGLISH ABSTRACT: An improved method is described for the preparation of DPI, suitable for the growth of single crystals. These crystals possess 88% of the receptor binding activity of insulin and exhibit hormonal activity of 20 I.U. milligram in the mouse convulsion test. In the presence of zinc ions, DPI cross reacts immunologically with insulin antibody. This paper was received for publication on 11 October 1975.

AUTHOR: None

ORG: Peking Insulin Structure Research Group

TITLE: "Structural Studies on DES-(B-chain C-Terminal Pentapeptide) Insulin: II. Growth of Crystals and Preliminary Crystallographic Observations"

SOURCE: Shanghai SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Mar 76 pp 67-70

TEXT OF ENGLISH ABSTRACT: Two forms of des-(B-chain C-terminal pentapeptide) insulin crystals are grown for preliminary x-ray diffraction observations. Crystallographic data for these crystals have been obtained. This paper was received for publication on 11 October 1975.

AUTHOR: None

ORG: Conformational Study Group, Institute of Biophysics, Chinese Academy of Sciences

TITLE: "Structural Studies on DES-(B-Chain C-Terminal Pentapeptide) Insulin: III. High Resolution NMR Studies"

SOURCE: Shanghai SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Mar 76 pp 71-78

EXCERPT OF ENGLISH ABSTRACT: Studies have been made of the 250 MHz nuclear magnetic resonance spectra of insulin and DPI. Differences have been found between the two, indicating that the splitting off of the C-terminal pentapeptide from the insulin molecule has brought about local changes in conformation in solution. It seems that these changes do not have any effect on biological activity. Many studies have revealed that an equilibrium exists between aggregation and dissociation. The degree of aggregation could be estimated from the line widths in the spectrum. Changes in concentration and pH of DPI solutions do not significantly affect the NMR spectra. As the concentrations and pH of the solutions are increased, the methyl regions for valine, leucine, and isoleucine, and aromatic regions of the insulin spectra are broadened. All these show that DPI molecules probably exist as monomers in zinc-free solution.

This paper was received for publication on 17 September 1975.

AUTHOR: None

ORG: Insulin Research Group, Shanghai Institute of Biochemistry, Chinese Academy of Sciences

TITLE: "Structural Studies on DES-(B-chain C-terminal Pentapeptide) Insulin: IV. State of Aggregation, Tyrosyl Environment and Peptide Backbone Conformation in Solution"

SOURCE: Shanghai SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Mar 76 pp 79-87

TEXT OF ENGLISH ABSTRACT: The 3-dimensional properties of des-pentapeptide insulin (DPI) in solution have been studied by several methods, in view of the obvious fact that such knowledge would have much to bear on the structure of the binding site of insulin. (1) The molecular weight of DPI was studied by the gel filtration method. The results demonstrate that DPI does not exhibit self-association behavior, and exists as monomer under the experimental conditions. This enables us to deduce that insulin binds its receptor in the monomer form; its action unit is the monomer. (2) The pH difference spectra, denaturation difference spectra, and temperature effect curves were examined. The results indicate that all 3 tyrosyl side chains of DPI are unmasked and situated on the surface of the molecule. (3) The UV CD curves of DPI were also studied. The far UV CD curve of DPI at pH 7.0 is similar to that of insulin, except that the negative value for  $[\Theta]_{220}$  decreases. This probably demonstrates that the

[continuation of SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO No 1, 1976  
pp 5-7]

peptide backbone conformation of DPI is very similar to that of insulin except that it is slightly extended for the former. The near UV CD curve for DPI differs from that of insulin and has an extremum at 266 nm and a low negative value of  $[\theta]$ . The assignment of this extremum to Phe and/or -S-S- was discussed. Taking into consideration the results given in preceding papers it may be concluded that the results of conformation research support our previous working hypothesis that the hydrophobic surface in between the two monomers that make up dimeric insulin constitutes a part of the receptor-binding site of insulin.

This paper was received for publication on 17 September 1975.

AUTHOR: None

ORG: Department of Medical Physiology, Hunan Medical College, Ch'ang-sha

TITLE: "Utilization of Some Monosaccharides and Disaccharides by the Erythrocytes of Healthy Chinese Adults"

SOURCE: Shanghai SHENG-WU HUA-HSUEH YU SHENG-WU WU-LI HSUEH-PAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Mar 76 pp 89-98

EXCERPT OF ENGLISH ABSTRACT: Using the manometric method, the results are summarized: (1) The endogenous respiration of erythrocytes was determined in 15 young male and 15 young female subjects: oxygen consumption rates within the first hour were respectively  $0.011 \pm 0.001$  and  $0.021 \pm 0.002 \mu\text{l}/\text{hr}/\text{mg}$  dry weight. (2) Utilization of 9 carbohydrates (4 hexoses, 3 pentoses, and 2 disaccharides) by erythrocyte suspensions was compared in 86 young adults. The approximate order was hexoses > pentoses > disaccharides. (3) The inhibition of lactic acid production and oxygen consumption was the strongest in the case of iodoacetic acid (IAA,) with sodium fluoride (NaF) ranking next, and arsenite third. (4) In connection with the results of our experiments, the possible mechanism of methylene blue in promoting oxygen consumption in erythrocytes have been briefly discussed.

This paper was received for publication 16 May 1975. YIN Lung-tsan [1438 7893 6363] formerly of Institute of Occupational Diseases and Labor Hygiene, Chinese Academy of Medical Sciences participated in the above work.

ARCHITECTURAL JOURNAL

AUTHOR: None

ORG: Industrial Building Stress Research Section, Department of Architectural Engineering, Tsinghua University

TITLE: "Studying Three-Dimensional Stresses in Industrial Buildings by Dialectical Materialism"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2 Aug 76  
pp 4-7

ABSTRACT: Generally, single-story industrial buildings are composed of parallel plane framework, roof, crane beams and gable walls; these are three-dimensional structures. For years, single plane frameworks had been analyzed in design calculations of the entire building. However, as electric cranes grew in use in these buildings by the early 1900's, three-dimensional stresses become important because the moving load thus induced must be considered. This article describes design practices based on three-dimensional stresses in the Second Peking General-Purpose Machinery Plant, beginning in 1970. Extension of this experience thus spread to different areas and the design calculations are found in KANG-CHIN HUN-NING-T'U CHIEH-KOU

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 4-7]

SHE-CHI KUEI-FAN [DESIGN STANDARD OF REINFORCED CONCRETE STRUCTURES] (TJ.10-74) by the State Capital Construction Commission; the standard was published in November 1974. Party rhetoric is then used to justify the design standard. Four diagrams are included.

AUTHOR: None

ORG: Survey Team for Rural Housing Construction, Hunan Provincial Institute of Architecture Research

TITLE: "Survey of Rural Building Construction in Hunan Province"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2 Aug 76 pp 8-12

TEXT OF ENGLISH ABSTRACT: According to statistics of investigations on the rural building construction of several counties, 500 production teams of Nanshei County have set up new villages and 16,000 households have moved into their new houses, amounting to 17 percent of the county's total rural population. Dayuan County has put up 26 new villages and Ningshian County 19 new villages. Moreover, housing construction work on different scale is carried out in other counties, too.

In respect to general layout, they implement the principle of combining industry and agriculture, city and countryside, being beneficial to production and convenient to the people; and on the basis of combining farmland capital construction and topographic

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 8-12]

features, they work out a unified plan of building construction. For instance, in hilly regions, one or two production teams are generally concentrated to form a new village. To save farmland, all the houses are built on the hills and arranged in the form of terraces according to topographic features. In the regions beside the Dongding Lake, owing to the fact that the even topography of the land makes it possible to set up houses in group, one brigade or more than two production teams are generally concentrated to form a new village, with houses arranged in rows along the bank of the lake.

In designing the plan and organizing the courtyard, the peasants' habits and characteristics of the local climate have been fully considered. At the same time, the traditional form has been improved so as to make the majority of the living and bedrooms well lighted and ventilated. To improve sanitary conditions, latrine, sheep fold and pigsty are located as far from the building as possible. In the hilly regions, every household has a courtyard surrounded by the main and auxiliary rooms. In the regions beside the lake, trees or hedges are often used to define the space of a courtyard. Houses are of one or two stories.

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 8-12]

In respect to the construction method of the houses, local building materials are widely used. In some regions, pebbles are used to make foundations, the lower parts of external walls and the walls of courtyards; in the regions beside the lake, reeds are employed as roofing materials. Brick-and-tile houses with green trees as their background present a thriving aspect of new socialist countryside.

Included are nine photographs and fifteen diagrams.

AUTHOR: PAO CHIA-SHENG [7637 1367 5116]

ORG: Worker-Peasant-Soldier Student Library Design Team of Class 72, Department of Architectural Engineering, Nanking Engineering College

TITLE: "Architectural Design of Library"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2 Aug 76 pp 13-19

TEXT OF ENGLISH ABSTRACT: Seven worker-peasant-soldier students of the Department of Architectural Engineering, Nanking Engineering College, in the first half of last year, went to Kiangsu Provincial Architectural Design Institute to conduct open-door schooling. They received a task of designing two libraries as their graduating practice. Under the guidance of the Party committees of the Department and the Design Institute, they went to construction sites to take part in physical labor, going into the thick of practice and endeavoring to grasp first-hand materials. They repeatedly studied the design schemes with librarians and building workers, and well completed their task. At the same time, adhering to the principle of combining education with production and scientific research, they analyzed and studied several dozens of libraries and had written some high-standard theses on this topic.

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 13-19]

The present paper deals with the function and layout of the library and the problems of designing reading rooms, book storage, book delivery, etc. The authors' viewpoints may be summarized as follows:

(1) The location of reading rooms and book stacks should be carefully arranged. In medium and small-sized libraries, book stacks may be adjacent to reading rooms for the convenience of management; in addition, it is sometimes desirable to locate book stacks on the ground floor and reading rooms on the upper floors for simplifying the structural system and making the dead load of books directly transmit to the ground. In larger libraries, due to the synthetic consideration of the requirements of natural lighting and ventilation, it is preferable to locate book stacks and reading rooms separately as independent units, connected by the book delivery department.

(2) Because the requirements of book stacks and reading rooms are different, their ceiling heights are different, too. The adjustment of difference in ceiling heights is a special problem in designing a library. In general, one story of reading room may be level with two tiers of book stacks, or two stories of reading

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 13-19]

rooms with three tiers of book stacks. The former is recommended for convenience of use because it makes every floor of reading rooms and book stacks connect directly in horizontal direction.

(3) In medium and small-sized libraries, every part of the building should have good exposure and be well lighted and ventilated. In general, asymmetric layout is better to meet the functional requirements than the symmetric one. In large libraries, due to the complicated conditions of the plan, artificial lighting and mechanical ventilation may be partially used in case of necessity.

(4) To give full play to the function of libraries in the three great revolutionary movements of class struggle, the struggle for production and scientific experiment, the selection of the site of a library should be paid keen attention to with a view to providing a good and quiet environment and being convenient to the readers. Besides, the site should be large enough to afford room for expansion.

Included are one table and sixteen diagrams.

AUTHOR: None

ORG: On-Spot Design Team, Office No. 6, Peking Design Institute of Architecture

TITLE: "Design of Fang-shan County Hospital"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2 Aug 76 pp 20-24

TEXT OF ENGLISH ABSTRACT: Since the Cultural Revolution, the Peking Municipality has successively set up in the various suburban counties a great number of commune hospitals and brigade cooperative medical stations, and at the same time correspondingly strengthened the construction of county hospitals, thus creating good conditions for the patients of the poor and lower-middle peasants to get treatment in time. The new Fang-shan county hospital is one of these hospitals.

This hospital accommodates 200 beds and serves 1000 patients daily. It is located near the Fang-shan Station, easily accessible by public transportation and having a good environment. The main block was planned asymmetrically so as to make both the outpatient department and wards have a wide vista. The majority of the rooms face

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 20-24]

south or north except the connecting part in the middle having eastern exposure. The total building area of the hospital amounts to approximately 7200 square meters, with an average of 34.6-38 square meters per bed.

Adhering to the principle of economy, the designers treated the elevations and the finishes of the interiors as simple and rustic as possible, and made good use of the floor area in planning the clinical departments.

Included are nine diagrams and eleven photographs.

AUTHOR: PU CHENG-WEI [1580 2973 0251]

ORG: None

TITLE: "Design of 100-Bed Hospitals in Industrial Areas"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2  
Aug 76 pp 25-29

ABSTRACT: At four to five hospital beds per 1000 of population, the 100-bed hospital designed in the article can serve a plant or mine employing about 20,000-25,000 workers and dependents. The hospital site should have convenient transportation facilities to the main industrial buildings or production area. On the average, 80-90 square meters of construction area is adequate for one hospital bed; construction density is 20-22 percent. There are three construction types -- assembling, scattering and composite types. A ward usually has fewer than eight beds and the number of three-bed rooms should be increased as suitable. The stair steps have a 12-cm height for safe carrying of stretchers. Pharmacy, offices and utility rooms should be in a wing adjacent to the out-patient division. Included are one table and seven diagrams.

AUTHOR: None

ORG: Research Laboratory, Peking Design Institute of Architecture

TITLE: "Study and Application of Waterproofing Joints in Prefabricated Large-Panel Buildings"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2  
Aug 76 pp 30-33 & 29

ABSTRACT: Beginning in 1958, prefabricated large-panel buildings were constructed in test projects at Peking on foreign designs. Wall cracks and joint leaks were some defects. By 1963, several institutes including the Peking Design Institute of Architecture and Tsinghua University, studied the problem of preventing leaks. After experiments and improvements, in August 1973 a concrete large-panel building was completed at Peking with thermal insulation and waterproofing characteristics. Double open spandrel vertical joints were applied at the exterior walls and slot horizontal joints were furnished for waterproofing. In a simulation test of 960 mm per hour of rainfall intensity and 23.90 m/sec wind velocity, no leaks were discovered. Included are two photographs, four tables and ten diagrams.

AUTHOR: LIN SHU-CH'IUNG [2651 3219 3890]

ORG: Third Design Laboratory, Hupeh Design Institute of Industrial Buildings

TITLE: "Design of a Microbe Agricultural Pesticides Factory

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2  
Aug 76 pp 34-35

ABSTRACT: This article describes Hsiao-kan Microbe Agricultural Pesticides Factory in Hupeh Province. The work flow includes three stages in cultivating microbes, fermentation and extraction. The industrial buildings designed include main shop, air compressor house, refrigeration machinery shop, water tower, cooling water tower, transformer and distribution house and others, as explained in Figures 1 and 2. A key problem in cutting the construction costs is to place varying height tanks (970 mm for seed tank, 1680 mm for breeding tank and 5290 mm for fermentation tank) on the second floor. The storage tank for fermentation liquid is 2500 mm high; the tank is placed on an underground pit to keep the story height low. Included are two photographs and four diagrams.

AUTHOR: None

ORG: Canton Municipal Design Institute of Architectural Engineering

TITLE: "New Buildings Beside Lake Liu-hua in Canton"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2  
Aug 76 pp 36-44

TEXT OF ENGLISH ABSTRACT: To meet the needs of developing foreign trade, a group of large buildings were set up, from 1972 to 1974, beside the Lake Liu-hua in the northern part of Canton's central district, including the new railway station, the exhibition building of China's Export Commodities Fair, the Tung-fang Hotel and the Liu-hua Hotel.

The new railway station was completed in April 1974, with a total building area of 28,600 square meters. It lies at the foot of the Yosiu Mountain, which is clad in verdure all the year round. The station is closely near by a main avenue encircling the city and easily accessible by public communications. Owing to the fact that the level of the railway line is much higher than that of the square, the cross-section of the station was so designed as to make the first floor be level with the underground passage and the second floor with

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 36-44]

the platform. The plan of the station was treated symmetrically, with a great hall in the middle and the entrance of the underground passage on the central axis of the hall. In the hall there is an escalator on the left side and a grand staircase on the right side. Thus the passenger traffic is distributed uniformly and without congestion. The great hall is open to all sides with its central part rising two stories and public facilities arranged around it. On both sides of the hall are courtyards, which make the building well lighted and ventilated.

The new exhibition building of China's Export Commodities Fair was set up in the spring of 1974 on the east side of the Lake Liu-hua; its total building area amounts to 110,000 square meters. The Fair comprises the hall of Chairman Mao's works, the hall of "In industry, Learn from Taching", the hall of "In agriculture, learn from Tachai", and twelve halls exhibiting export commodities such as machinery, silks, cotton cloth, etc. Without the necessity of erecting high building, all the exhibition halls are of four stories; the first and second floors are allotted to exhibition areas and the third and fourth floors to offices. Existing trees on the site are retained as far as possible, and the west elevation of the building is provided

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 36-44]

with sun-shading treatment. The close combination of greenery with architecture makes the group of new buildings look more beautiful and attractive.

The Tung-fang Hotel was completed in October 1974, with 41,000 square meters of building area. It accommodates over 1200 persons, mainly serving foreign guests. The new building is adjacent to the old one, and the open space between them form a large and quiet courtyard. Rooms facing west command a fine view of the Liu-hua Park.

The Liu-hua Hotel is located at a terrace land to the south of the square of the railway station. It comprises 690 guest rooms and accommodates more than 1000 beds. The hotel is composed of two buildings, south and north, connected by covered colonnades. The general layout is made good use of the topography of the site to form courtyards with different levels, which are well decorated with grass and trees.

Included are one table, nine diagrams and twenty-nine photographs.

AUTHORS: CHAO WAN-LIN [6392 8001 3829]  
CHEN K'AI-CH'AO [7115 7030 6389]

ORG: None

TITLE: "Reinforced Concrete and Vermiculite 'Sandwich' Wall Panels"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2  
Aug 76 pp 45-46

ABSTRACT: This article describes bearing-type reinforced concrete vermiculite sandwich wall panels used in the protective structures of a machinery repair shop of an oil refinery. The shop construction area is about 10,000 square meters, including metal-working, casting, forging, electroplating, heat treatment, riveting, welding and wood model sectors as well as offices and utility buildings. Vermiculite is widely used in oil refinery construction; the broken vermiculite pipes or plates can be processed into heat insulating material by blending with cement at a ratio of 2.5:1. The mixture is then poured into 400 x 400 x 45 mm prefabricated blocks, which are placed into sandwiched wall panels. Included are four photographs and six diagrams.

AUTHOR: (1) None  
(2) CHIEN YUAN [1696 6678]  
(3) None

ORG: (1) Survey and Design Institute, Construction Bureau, Sinkiang Uighur Autonomous Region  
(2) None  
(3) Kansu Provincial Institute of Architectural Surveying and Designing

TITLE: "Architectural Records"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2  
Aug 76 pp 47-49

ABSTRACT: This article comprises three parts: (1) Martyrs' Tomb at Urumchi Municipality; this is the burial site of three Communist martyrs, including Chairman Mao's brother MAO TSE-MIN [3029 3419 3046]. The tomb was built in 1956 and the expansion project was completed in June 1975. (2) Design of Underground Restaurant; included are a mess hall, kitchen and store room, 876 square meters for 180 seats. The ceiling of mess hall is a curtain-like structure averaging 29 cm in thickness. (3) Design of Wu-wei Nitrogenous Fertilizer Plant has

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp 47-49]

an annual capacity of 10,000 tons of synthetic fertilizer. Three-hinge arch reinforced-mesh cement zigzag roofs are used for warehouses and composite roof frameworks with reinforced-concrete top side members and round steel tie rod lower side members are used for shops. Included are three photographs and seven diagrams.

AUTHOR: None

ORG: None

TITLE: "Captions to Photographs on Front Cover, Inside Front Cover, Back Cover and Inside Back Cover"

SOURCE: Peking CHIEN-CHU HSUEH-PAO [ARCHITECTURAL JOURNAL] No 2 Aug 76 pp front cover, inside front cover, back cover and inside back cover

ABSTRACT: The front cover photograph shows the exhibition building of China's Export Commodities Fair in the center. Immediately behind is the Telecommunications Building and further behind, at the end of the street, is the New Canton Railway Station. On the left side of the street is the Liu-hua Hotel. On the inside front cover, the upper photograph shows a tractor depot in the Ch'uan-t'ang-tzu Commune, Hsiang-t'an County, Hunan Province. The middle and lower photographs show rowhouses for members of Shuang-feng Production Brigade of T'ieh-ch'ung Commune, Ning-hsiang County. On the back cover, the upper photograph shows the New Canton Railway Station. The middle photograph shows the west elevation of the north exhibition building of China's Export Commodities Fair. The lower photograph is the new building of Tung-fang Hotel. On the inside back

[Continuation of CHIEN-CHU HSUEH-PAO No 2, Aug 76 pp front cover,  
inside front cover, back cover and inside back cover]

cover, the upper picture is an exterior view of Nanking Airport  
Terminal Building; the lower picture shows its interior.

10424  
CSO: 4009

HIGH ENERGY PHYSICS

AUTHOR: TUNG Sheng /2639/0581/

ORG: None

TITLE: "On High Energy Physics"

SOURCE: Peking KAO-NENG WU-LI /HIGH ENERGY PHYSICS/ No 1, Sep 76  
pp 5-10

ABSTRACT: The study of high energy physics is concerned with the study of so-called "elementary particles". Historically, it evolves from the study of atomic physics (or low energy physics) and the study of nuclear physics (or medium energy physics). Current studies of high energy physics rely on two major sources of high energy particles:-cosmic rays and accelerators. With the aid of modern detectors and computers, it is now possible to measure the velocity, life span, mass, electric charge, spin, etc. of the high energy particles and to process large amount of such data efficiently. The study of high energy physics is of fundamental importance because it holds the key to the laws of natural science and it is a focal point of controversy between objectivism and subjectivism, and between dialectics and metaphysics. On the practical side, developments in high energy physics have great impact on industrial production as well as medical and military technologies.

AUTHOR: WENG I-wen /5040/0110/2429/

ORG: None

TITLE: "Unscientific Terminologies in Physics"

SOURCE: Peking KAO-NENG WU-LI /HIGH ENERGY PHYSICS/ No 1, Sep 76  
p 9

ABSTRACT: Many terminologies in physics reflect the evolvement of scientific knowledge in history; they also reflect the limited view of the physical world and the influence of metaphysical concepts. For example, the terms "atoms" (yuan-tzu) and "protons" (chih-tzu) both imply the meaning of "fundamental particles, which we know is incorrect. The " $\mu$ -meson" does not obey the laws of mesons but in fact has the properties of electrons. The term "elementary particles" implies "indivisible particles"; this concept is now also subject to criticism.

AUTHOR: KAO T'ien 7559/1131

ORG: None

TITLE: "Relationship Between the Study of Meteorolite and High Energy Physics"

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1, Sep 76  
p 10

ABSTRACT: On March 8 of this year, a large scale meteorolite shower rarely seen in history occurred in Chi-lin Province. Because of their long journey through space and the unshielded bombardment by cosmic rays and solar radiation, meteorolites often contain valuable information with regard to the nature of cosmic rays, high energy reactions, and products of these reactions. By studying meteorolites, it may be possible to answer certain questions in high energy physics such as: the possibility of new processes under the bombardment of cosmic rays; the existence of new elements not found on earth; and the existence of new particles created by high energy interactions.

AUTHOR: TU Wen-pu 2629/2429/3940

ORG: None

TITLE: "Treatment of Cancer Using High Energy Accelerator"

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1, Sep 76  
pp 11-13 and 31

ABSTRACT: The use of high energy particles such as  $\pi$ -mesons, protons, and neutrons for treatment of cancer has proven to be more effective than the older methods of using X-rays, Cobalt-60  $\gamma$ -rays or high energy electrons. Specifically, the effectiveness of high energy particles is attributed to the following characteristics: 1) higher relative biological effect (RBE) or the ability to kill living cells; 2) higher linear energy transfer (LET), which allows more efficient destruction of oxygen-defficient cancer cells; and 3) more desirable Bragg Curve, which allows a concentration of  $\pi$ -mesons in the cancerous region. Furthermore, bed-side experiments indicate that treatment with high energy particles has a higher rate of success and a lower rate of recurrence; it also allows more accurate diagnosis of early tumors and has less damaging effects on healthy tissues. A high energy accelerator designed for cancer treatment must be able to generate  $9 \times 10^{12}$  neutrons per second,  $4 \times 10^9$  protons per second, and  $2.6 \times 10^8$   $\pi$ -mesons per second.

AUTHOR: T'ANG Hsiao-wei 0781/1321/12187

ORG: None

TITLE: "What Are High Energy Detectors?"

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1 Sep 76  
pp 14-17

ABSTRACT: High energy detectors are instruments for recording and measuring high energy particles. During a high energy physics experiment, several types of high energy detectors are required; e.g., detectors with accurate spatial resolution for measuring the paths of high energy particles, detectors with accurate time resolution for measuring the time of occurrence of events, and detectors with accurate energy resolution for measuring the energy, momentum, and velocity of particles. The high energy detectors commonly used in current physics experiments include: 1) the bubble chamber; 2) the emulsoid photographic plate; 3) the spark chamber; 4) the glow chamber; 5) the multi-filament positive ratio chamber; 6) the drift chamber; 7) the scintillation counter; and 8) the Cerenkov counter. Currently, new technologies are being developed to construct detectors with high spatial as well as high time resolution capabilities.

AUTHOR: KAO Ping 7559/03657

ORG: None

TITLE: "In the Midst of the Wu-Meng Mountains"

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1, Sep 76  
pp 18-20

ABSTRACT: In the midst of the Wu-Meng Mountains in Southwest China, the Chinese Academy of Science has a cosmic ray experimental station which was established to observe and record high energy particles from outer space. The main facility of the station is a magnetic cloud chamber for recording the trace of cosmic rays as they pass through the chamber. The operation of the cloud chamber is based on the condensation of super-saturated vapor onto the ionized particles generated by the bombardment of the cosmic rays. The condensation is achieved by a sudden cooling process via adiabatic expansion of the gas mixture within the chamber. By analyzing the photographs of the cloud chamber, it is possible to determine the electric charge, the velocity, and the mass of the particles. In 1972, the facility made an important observation of a heavy charge particle with a mass greater than  $10^9$  eV. In addition to the main cloud chamber, the facility also has a lower cloud chamber for observing the interactions of cosmic rays with other matter.

AUTHOR: HSU Chien-ming 1776/1696/69007

ORG: None

TITLE: "A Machine for Accelerating Charged Particles--The Accelerator"

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1, Sep 76  
pp 21-24

ABSTRACT: Accelerator is an instrument for generating high energy particles by artificial means. Modern accelerators are capable of accelerating protons to an energy level of  $400 \times 10^9$  eV and electrons to an energy level of  $22 \times 10^9$  eV. There are basically three types of accelerators: 1) the high voltage accelerator, whose electric field is generated from a high voltage source; 2) the electron induction accelerator, whose electric field is generated by the induction effects of a time-varying magnetic field; and 3) the resonance accelerator, which has a high frequency electric field that is in resonance with the motion of the particles. Currently, new technologies and new principles are being introduced in the design of accelerators; e.g., the mutual collision accelerator, the use of automation and super-conductor technologies, and the use of new principles of acceleration such as laser acceleration, group acceleration, and mutual interference acceleration. In addition to its use as a tool for studying

Continuation of KAO-NENG WU-LI No 1, Sep 76 pp 21-24

elementary particles, the accelerator also has applications in industries, agriculture, medical treatment, national defense, and other scientific research.

AUTHOR: K'0 Chih /2688/0032/

ORG: None

TITLE: "A Conversation Between Sister Lin and Mr. Lu"

SOURCE: Peking KAO-NENG WU-LI /HIGH ENERGY PHYSICS/ No 1, Sep 76  
pp 25-30

ABSTRACT: In dialogue form this article discusses the following topics in modern physics: 1) the infinite extent of the universe both in space and in time; 2) the infinite divisibility of matter; 3) the evolution of the techniques and tools of dividing atoms; 4) the three universal velocities, which are the satellite velocity, the escape velocity from earth gravity, and the escape velocity from solar gravity; 5) the use of photons as energy source for separating electrons from atoms and the quantization of motion of sub-atomic particles; 6) the structure of nucleus; 7) the forces of strong interactions between particles; 8) the use of accelerators to open up the nucleus and to create new particles; and 9) the basic meaning of studying high energy physics and elementary particles.

AUTHOR: FANG Hu /2455/3275/

ORG: None

TITLE: "The Screening Problem of High Accelerators"

SOURCE: Peking KAO-NENG WU-LI /HIGH ENERGY PHYSICS/ No 1, Sep 76  
p 32

ABSTRACT: High energy accelerators often generate radioactive by-products such as  $\pi$ -mesons, k-mesons, neutrons, and photons. The screening of these particles used to be a difficult problem because of their high penetration ability and their interactions with matter to create secondary particles. However, careful studies of the behavior and motion of high energy particles have provided a solution to the pollution problem; an example is to absorb these particles by using a thick wall of light nuclei. In socialist countries, efforts are being made not only to study methods of screening but also to find ways of utilizing the radioactive particles for medical purposes and other useful applications.

AUTHOR: None

ORG: High Energy Office, Earthquake Monitoring Group

TITLE: "The Radon Content in Underground Water and Earthquake Prediction"

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1, Sep 76  
p 33

ABSTRACT: Recent observations indicate that there is a strong correlation between radon content in underground water and the occurrence of earthquake. In particular, underground radon content is a good indicator for earthquake prediction because of: 1) its unique underground source; 2) its chemically inert property which allows a true measure of the dissolved radon in water; 3) the correlation between radon concentration and the variation of underground stresses; and 4) the correlation between its solubility in water and underground temperature. On the basis of changes in underground radon content, it is possible to provide rough estimates of the center of an earthquake, its intensity, and its time of occurrence.

AUTHOR: HO Tso-hsiu 0149/4373/1652

ORG: None

TITLE: "The 'Bootstrap' Theory and the 'Dialectic Method' of Problems of Philosophy

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1, Sep 76  
pp 34-36

ABSTRACT: In this article, the author criticizes the so-called 'Bootstrap' theory of the structure of elementary particles, which states that elementary particles are the fundamental entities of nature and are composed of other elementary particles. He also rejected the hypothesis of problems of philosophy who proposed that elementary particles can be regarded as both fundamental and composite entities. He pointed out that the viewpoints of problems of philosophy are in contradiction with those of Engels and Lenin, and that they violated the concept of dialectic objectivism, which implies the infinite divisibility of all matters and the non-existence of fundamental entities.

AUTHOR: None

ORG: None

TITLE: "The Discovery of an Interesting New Particle"

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1, Sep 76  
p 35

ABSTRACT: In June of this year, foreign physicists announced the discovery of a new particle which was created during collision of a high energy electron beam with a high energy positron beam. This particle has the following characteristics: 1) it has a mass equal to twice the proton mass (1.87 GeV); 2) its life span is 600 times shorter than the J particle; 3) it decays into one k-meson and one  $\pi$ -meson or one k-meson and three  $\pi$ -mesons. The new particle is of particular interest to physicists because it may provide the experimental verification of the existence of a fourth type of quarks which are considered to possess the so-called "strange" property.

AUTHOR: None

ORG: None

TITLE: "Discovery of a Heavy Particle With 'Strange Number'?"

SOURCE: Peking KAO-NENG WU-LI HIGH ENERGY PHYSICS No 1, Sep 76  
p 35

ABSTRACT: In August 1976, a new heavy particle was discovered which is considered to possess the so-called "strange" property. The new particle was produced by bombarding a beryllium target with high energy photons in a high energy accelerator. The mass of the heavy particle is 2.4 times that of a proton (2.26 GeV) and it decays into five particles. To verify the existence of this new particle, 1500 experiments were conducted over a period of two years.

3012  
CSO: 4009

SCIENTIFIC EXPERIMENT

AUTHOR: YAO Kuang-hua [1202 0342 5478]

ORG: Ma-an-shan Mining Research Academy

TITLE: "A New Transportation Equipment for Mines - The Shift-Transporter"

SOURCE: Peking K'0-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 11, Nov 76 p 2

ABSTRACT: At strip mining sites, belt conveyor is a piece of economical equipment for continuous transportation, compared with trucks, electric cars, or trains, but the belt conveyor is much more difficult to move as the mining site advances. The academy recently designed a machine to move the belt conveyor. It is named a I-she-chi [shift-transporter.] By picking up a section of the conveyor at a time, this new machine can move it horizontally without requiring it to be disassembled first. The specially designed belt conveyor sections and the process of its being moved by a shift-transporter are described briefly with drawings.

AUTHOR: YU Chung [0060 5883]

ORG: Shantung Provincial Institute of Tobacco

TITLE: "Why is it that Haploid Breeding is Faster?"

SOURCE: Peking K'0-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 11, Nov 76 p 3

ABSTRACT: The haploid breeding technique was adopted in 1974 to produce the new tobacco variety Tan-yu No 1. Since then, the technique has been applied in hybridization breeding of such crop plants as rice and wheat as well as tobacco and the ordinary requirement of 7 to 8 years to breed out a new variety of desired characteristics is shortened to half. With drawings, this paper explains the segregation phenomenon of  $F_1$  and/or subsequent generations of hybrids and how this phenomenon can be avoided with the technique of vitro culture of pollens of  $F_1$  to produce haploid cells which are then artificially multiplied to create pure diploids. In this manner, the lines with different characteristics are stabilized quickly and the selection process is, therefore, shortened.

AUTHOR: None

ORG: Yen-ch'eng District Institute of Agricultural Machinery, Kiangsu

TITLE: "Inter-cropping and Machine for Turning Green Fertilizer"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 11, Nov 76 pp 4-5

ABSTRACT: The 3 hsien of She-yang, Ta-feng, and Tung-t'ai of Yen-ch'eng District are on the coast of the Yellow Sea, with saline and alkaline sandy soils. Cultivation of these soils began after the liberation and there was only one crop of cotton a year. During the great leap forward, an inter-cropping system was adopted and through the cultural revolution, this system has been extended to 80% of the acreage. The inter-cropping system consists of companion crops of grains, cotton, and 2 crops of legumes. The winter legumes are turned under in April to form the basic fertilizer for the cotton crop. A second crop of legumes is planted after the wheat harvest in June, and turned under toward the end of July to form supplementary fertilizer for the cotton. The only shortcoming of this cropping system is its heavy demand on labor. The existing plows cannot be used because of the companion crops and turning the legumes by hand is too slow. The planting time of the subsequent crop is often sadly delayed. After more than 10 years of research and experimentation, the institute finally perfected a special attachment for the hand-held tractor. This tool is designed specially for turning the legumes. The inter-cropping system and the special tool are described with drawings.

AUTHOR: None

ORG: Plant Protection Group, Institute of Agricultural Machinery, Machinery Division, First Ministry of Machines

TITLE: "Ultra-fine Jet Sprayer: Tung-fang-hung No 18 Type"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 11, No 76 pp 7-8

ABSTRACT: The Tung-fang-hung No 18 type atomizer is a knapsack style ultra-fine sprayer, weighing 14.5 kg. It has a capacity of 11 liter of insecticide and interchangeable heads to accommodate powder or oil solution. The spray can be adjusted in the range of 50-200 ml/minute. With no wind, its effective spraying distance is about 10 m and its average productivity is 60 mu/hour. Compared with the common sprayers, it is 5-10 times more efficient, while consuming only 1/50 - 1/500 of the amount of drug. The structure of the new instrument and the proper technique of operation are discussed.

AUTHOR: None

ORG: Press and Information Group, Peking Municipal Bureau of Agricultural Machinery

TITLE: "Mechanized Threshing Yard"

SOURCE: Peking K'0-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 11, No 76 pp 10-11

ABSTRACT: The suburbs of Peking have only about 174 days of frost-free period. In other words, the period suitable for the growth of crops is less than half of the year. There is always a labor shortage in the summer. In these hot summer days, just when a whole year's harvest depends upon how fast the work is done, storms are frequent and unpredictable. The mechanized threshing yard was designed to resolve these problems. The one in Ta-yu-tzu Brigade, P'ing-ku-hsien began its operation in the wheat harvest season of 1975. Now, one girl, sitting under a parasol and pushing buttons, can accomplish the work of more than 20 men. The machine threshes the wheat, separates the grain from the husk, and dries the grain on rainy days. The straw is jettisoned to an area 30 m away and is automatically stacked into a pile. This type of mechanized yard is in operation in more than 100 brigades in the Peking suburbs at present. Some of them are designed even better than the one described in some detail in the paper.

AUTHOR: CHANG K'ai-hsun/1728 7030 6676

ORG: None

TITLE: "Gas-sensitive Components Capable of Detecting Combustible Gases"

SOURCE: Peking K'0-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 11, No 76 pp 14-16

ABSTRACT: Many combustible gases are being used today. Marsh gas is a new fuel in the rural villages. Semi-conductors are manufactured by the electronic industries under hydrogen protected atmosphere. Isobutane, normal butane, and chloroethane are used as intermediates by the geothermal power plants. Combustible gases are also necessary for the production of chemical fertilizers and high polymers. Due to the fact that spontaneous combustion will occur when the content of such gases in the air reaches a certain limit; while most of these gases are colorless and odorless, effective detectors are needed wherever these gases are applied. This paper explains the theory of gas-sensitive semi-conductors and the method of applying them to detect the presence of combustible gases. The advantages and disadvantages of detectors made with gas-sensitive components are compared with those of other detectors made according to other theories.

AUTHOR: TSOU Chi-pao 6760 4480 1405

ORG: Shanghai Coastal Rescue and Salvage Bureau

TITLE: "Underwater Photography"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 pp 16-17

ABSTRACT: This paper explains the effects of the underwater environment on photography and the technique of using the SHS-1 type underwater camera to take photographs under the water. The SHS-1 type under water camera is made by placing the Hai-ou-4 camera in a water-proof container made of a nickel alloy. A picture of this Chinese-made camera and its major accessories is given.

AUTHOR: None

ORG: Copier Technology Group, Tsingtao Mold Plant

TITLE: "Static Electricity Copying"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 pp 18-19

ABSTRACT: This paper gives the theory of static electric copying, the structure of the Chinese-made Se-A type selenium static electric copier, and its advantages and shortcomings. This machine can produce copies of figures drawn with a pencil onto ordinary paper with satisfactory definitions. If a large number of copies are to be reproduced from a single original, the cost will definitely be higher; therefore, the copier is not a substitute for a printing machine.

AUTHOR: LIANG Yuan-po 2733 0337 0590  
HO Han-wen 0149 3352 2429

ORG: None

TITLE: "Ocean Surveying"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 pp 20-22

ABSTRACT: Not so long ago, a very exciting news was reported on the newspapers. A transpacific scientific survey was completed for the first time by 2 Chinese ocean ships, Hsiang-yang-hung No 5 and Hsiang-yang-hung No 11. Many scientific instruments were used during this survey and all of them were designed, manufactured, and installed by Chinese themselves. This survey of the Pacific Ocean lasted more than one months. Many first hand oceanographic, marine meteorology, marine chemistry, ocean floor geology, ocean floor topography, ocean navigation data were thus obtained for the first time by the Chinese. The reasons for the need of conducting ocean surveys and the items and techniques of investigation are explained in the paper.

AUTHOR: HO Jui-ch'ang 6320 3843 2490

ORG: None

TITLE: "Management of Childhood Fever"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 p 23

ABSTRACT: Normally, children's body temperature is regulated by the central nervous system to  $36-37^{\circ}\text{C}$  (under arm measurement.) Bacterial and virus infections, head injuries, metabolic diseases, sweat gland disorders, vaccinations, sun stroke, hypersensitivity to certain drugs, or malignant tumors may cause the body temperature to rise above that level. The measures recommended in the paper include adjusting the room temperature to  $18-20^{\circ}\text{C}$ , pulling down window shades to keep out the sun, keeping the covers light, and removing the child from the hearthbed. If the fever is below  $38.5^{\circ}\text{C}$  the child can usually recover after the above measures are taken. If the fever is higher than that level, proper measures of reducing the body temperature with fever-relieving drugs, and/or applying cool water or alcohol should be adopted. If the fever is excessively high or if it persists, the child should be brought to a doctor for diagnosis and treatment.

AUTHOR: JEN Yu-ling 0117 3768 3781  
WANG Ting-ch'ang 3769 1353 2490

ORG: None

TITLE: "Citric Acid"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 pp24-25

ABSTRACT: Citric acid,  $C_6H_8O_7$ , was discovered in 1784. Fruits, such as lemon, orange, pineapple, etc. generally contain 6-9% citric acid. When lime cream and sulfuric acid are added to fruit juice, crystalline citric acid may be obtained. In 1893, it was discovered that several microorganisms can manufacture citric acid from sugar, honey, or starch, and industrial production of citric acid thus began. Of all the microorganisms, *Aspergillus niger* was found to be the most efficient in citric acid production. This microorganism is like a little chemical factory. Within its body, a series of processes of decomposition, conversion, and synthesis can be performed repeatedly to turn sugar into citric acid. In recent years, following the rapid development of petroleum industry, the technique of using paraffin instead of sugar to produce citric acid with the microorganism technique was perfected. After the incorporation of large quantity of oxygen atoms by the microorganism, the rate of return from paraffin is as high as 150%. The extensive applications of citric acid in the food processing industry, pharmaceutical industry, and other light industries are also explained.

AUTHOR: None

ORG: None

TITLE: "Science and Technology News"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 pp 26-27

ABSTRACT: This paper contains short items on the following subjects: (1) Asbestos and plastic resin floor tile; (2) Electronic Knitting stitch counter; (3) Color density meter for the printing industry; (4) Using the resin of the bark of the fruits of chestnut oak to clean up the water sediments inside a boiler; (5) China's first high speed liquid ammonia pump successfully made; (6) Laser interference length measurement instrument; (7) A large water pump with a 4.5 m diameter front wheel.

AUTHOR: HSU Kung-yuan /1776 0501 0337/

ORG: Department of Inspection and Examination, Kansu Provincial People's Hospital

TITLE: "Why is it That Blood for Chemical Analysis to Determine Liver Function Should be Withdrawn on an Empty Stomach?"

SOURCE: Peking K'0-HSUEH SHIH-YEN /SCIENTIFIC EXPERIMENT/ in Chinese No 11, Nov 76 p 29

ABSTRACT: At present, items of chemical analyses to determine liver function have exceeded 500, mainly to assist the diagnosis and identification of liver ailments. The specialists in Peking, Wuhan, and Fu-chou believe that under normal conditions the effects of food and drink on the chemical contents in the blood are not so great because following intestinal absorption, the food is constantly being converted, stored, and utilized so that the contents of some chemicals in the blood are regularly stable. At present, they have not observed a sufficient number of cases and further studies are needed to prove their opinion to be correct. Meanwhile, aside from emergency cases, the blood should still be withdrawn in an empty stomach before the breakfast.

AUTHOR: LI Jung-ho /2621 2837 0735/

ORG: None

TITLE: "Fruits and the Health of the Human Body"

SOURCE: Peking K'0-HSUEH SHIH-YEN /SCIENTIFIC EXPERIMENT/ in Chinese No 11, Nov 76 pp 30-31

ABSTRACT: The most important nutritional content of fruits is vitamin C. Fruits that have the highest vitamin C content are those of hawthorn and buckthorn /ju-jube/ but after they are dried or otherwise processed, only a portion is preserved. Fruits can also be used as medicine. The sugar content of fruits is a good source of energy for men. Some fruits also contain harmful substances, however. If a large quantity of lichee is consumed, the glucose content of the blood may fall suddenly and circulatory failure may result. Persimmons can cause stones in the stomach and some people may be allergic to a certain enzyme content of the pineapple. The poisonous alkaloid contained in the almond is also explained.

AUTHOR: None

ORG: Experimental Station, Tientsin Municipal Pan-ch'iao Farm

TITLE: "Overcoming the Shortcomings of Hybrid Kaoliang [Grain Sorghum]:  
Poor Food Quality"

SOURCE: Peking K'0-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 11,  
Nov 76 p 32

ABSTRACT: Poor and middle farmers complained of hybrid kaoliang as "difficult to eat," and they also do not like the fact that a special and difficult technique is required to produce the seeds. Their complaints inspired concentrated research to improve these two properties. Beginning in 1972, more than 10 different sterile systems have been used for selection and experimental combination to produce the new hybrid, Chin-tsa No 9. The properties of this new 1975 hybrid are described.

AUTHOR: SHAO Wei [6730 0251]

ORG: Department of Biology, Kirin Normal University

TITLE: "Heterozygous Twins and Homozygous Twins"

SOURCE: Peking K'0-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 11,  
Nov 76 p 33

ABSTRACT: This paper gives the genetic explanation of the difference between identical and non-identical twins.

AUTHOR: WU Cheng-an 0702 2398 1344

ORG: Peking Institute of Zoology, Chinese Academy of Sciences

TITLE: "Cell Membrane and the Prevention and Treatment of Cancer"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 pp 34-35

ABSTRACT: Although the pathogenesis of cancer is not yet completely clarified, it has been known that the most common biological characteristic of all the different cancer cells is the disharmonious interrelationship among the cells. This paper proceeds to call cancer a molecular disease of the cell membrane and to explain the delicate difference between a cancer cell and a normal cell. As a result of the understanding, the use of CPDS, in animal experimentation, to cause the membrane of cancer cell to carry a negative charge so as to prevent metastasis appears to be very promising.

AUTHOR: HUANG Chu-chien 7806 4376 1017

ORG: Peking Institute of Zoology, Chinese Academy of Sciences

TITLE: "Prevention and Treatment of Snake Poison"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 pp 36-37

ABSTRACT: Of the more than 160 species of snakes in China, 50 are poisonous. The poor and middle farmers, the visiting educated youths in the country-side and the mountains, and the soldiers in their patrol activities encounter poisonous snakes regularly. Snakes actually attack only when they feel threatened; therefore, it is important to be able to distinguish the poisonous snakes from the benign ones. This paper lists 9 different species of poisonous snakes common in China and describes their morphology with drawings. The emergency rescue measures for poisonous snake bite are explained including a description of some prepared drugs of Chinese traditional medicine designed to treat poison by specific snakes. In foreign countries, injection of antiserum is used to treat snake poison. Antiseraums against several species of poisonous snakes are now available in China and are being clinically applied.

AUTHOR: None

ORG: Reporter, K'0-HSUEH SHIH-YEN

TITLE: "The Peking 4LZ-2.5 Type Self-Propelled Grain Combine Harvester is Harvesting Wheat"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 front cover

ABSTRACT: The cover of this issue of the journal portrays a red colored combine at work harvesting wheat.

AUTHOR: None

ORG: None

TITLE: "Huang-tao Oil Harbor Triumphantly Completed and Put Into Production"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 inside back cover

ABSTRACT: The inside back cover of this issue of the journal contains 4 photos, all depicting the newly completed modern deep water oil harbor, Huang-tao Oil Harbor of Tsingtao Bureau of Harbor Affairs. The engineering project of the oil harbor includes loading or unloading crude oil and fuel oil and transporting them, a water supply system, and a waste water treatment system. One photo portrays an overall view of the harbor; another of workers learning the directives of Chairman Mao; another the control room of the crude oil delivery system; another 2 oil tankers, a 50 thousand ton class and a 20 thousand ton class, being loaded with crude oil simultaneously.

AUTHOR: None

ORG: None

TITLE: "Assemblage of Equipment for Processing Filaments, Designed and Manufactured by the 'Three-Unity' Technical Reform Team of the Shanghai Instrument Filament Plant"

SOURCE: Peking K'0-HSUEH SHIH-YEN SCIENTIFIC EXPERIMENT in Chinese No 11, Nov 76 back cover

ABSTRACT: The back cover of this issue of the journal is a color photograph of a room in which filaments are being manufactured on a set of 5 machines appearing to be obviously identical. On the wall there is a plaque with the characters of 'Industries Learn From Ta-ch'ing.'

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END